

## SAN JOAQUIN LE CONTE'S THRASHER (*Toxostoma lecontei macmillanorum*)

Sam D. Fitton, Bureau of Land Management, 20 Hamilton Court, Hollister, CA 95023;  
sfitton@ca.blm.gov.

### Criteria Scores

Population Trend	Range Trend	Population Size	Range Size	Endemism	Population Concentration	Threats
10	5	10	10	10	0	10

### Special Concern Priority

Currently considered a Bird Species of Concern (year round), Second Priority. No subspecies were included on the original Bird Species of Special Concern list (Remsen 1978), but the species was included in this list as a Third Priority. Included on CDFG's (1992) unprioritized list, but no subspecies were distinguished.

### Breeding Bird Survey Statistics for California

Data inadequate for trend assessment (Sauer et al. 2000).

### General Range and Abundance

The San Joaquin Le Conte's thrasher is endemic to California, residing only in the southern San Joaquin Valley, and adjacent Cuyama Valley and Carrizo Plain (Grinnell 1933, Grinnell and Miller 1944, Dobkin and Granholm 1990, Laudenslayer et al., 1992, Sheppard 1996). Highest densities occur in the Maricopa area of southwestern Kern County (Sheppard 1970). Two subspecies, *T. l. lecontei* and *T. l. arenicola*, were recognized by the AOU (1957). In 1964, Phillips (1965) proposed *T. l. macmillanorum* for the birds breeding in the San Joaquin Valley. Sheppard (1973, 1996) retained the AOU's latest (1957) treatment based on results of univariate analyses of morphological and color variation in fresh fall specimens, and genetic studies unpublished at the time (Zink et al. 1997). Zink et al. (1997) found that neither mtDNA nor colorimetric data supported recognition of *macmillanorum*. Regardless of taxonomic treatment, Le Conte's thrashers in the San Joaquin

Valley are likely to be reproductively isolated from other populations and occupy a unique environmental setting, making their protection important in conserving California's bird diversity.

### **Seasonal Status in California**

Permanent resident; breeding season extends from mid December to late June, with egg dates falling between early February and the end of May (Sheppard 1996). The species has limited dispersal capabilities. Marked individuals in suitable habitat near Maricopa moved a maximum of 5 to 8 km (Sheppard 1996) and few extralimital records exist (Laudenslayer et al. 1992, Sheppard 1996).

### **Historical Range and Abundance in California**

Grinnell and Miller (1944:348) described the Le Conte's thrasher as A fairly common under suitable conditions, but these are localized and occur only scatteringly over general range. The species is resident in two distinct portions of California, the San Joaquin Valley, and desert southeast. The information on the San Joaquin Valley portion changed little in Grinnell and Miller (1944) from Grinnell's (1933) original treatment. Grinnell (1933) used a reverse AJ shape to describe the range: the northern extent stopped near Huron, the valley floor of the San Joaquin Valley was excluded, and the short end of the reverse AJ stopped just to the north of Bakersfield, near Poso Creek. Sheppard (1970, 1973) added the Carrizo Plain and Cuyama Valley based on his personal observations, added much of the San Joaquin Valley floor based on specimens near Wasco collected after Grinnell and Miller (1944), and added the Panoche Mountains based on an observation by a birder. Declines in the abundance and habitat quality were noted by Grinnell (1933). Tyler (1913) did not record the species for the AFresno District the western edge of which approaches the known range.

### **Recent Range and Abundance in California**

The current distribution of the San Joaquin Le Conte's thrasher is determined largely by the presence, structure, and vigor of saltbush, proximity to other saltbush areas, size of habitat fragment, and proximity to California thrashers. Irrigation and land development have eliminated a considerable amount of former habitat in the San Joaquin Valley, restricting the taxa to a small portion of its former range (Laudenslayer et al. 1992). There are five known areas of occurrence. Each area contains a mosaic of habitats with varying degrees of suitability. A brief discussion of each area follows:

*McKittrick-Maricopa.* This area extends from the Belridge oil field just north of McKittrick, south to Devil's Gulch south of Maricopa, east to the California Aqueduct between Lokern Pumping Station and Pentland, and west to the lower third of the Temblor Mountains. Extending 75 km north to south, and 25 km west to east, this is by far the largest habitat area. The highest concentrations of Le Conte's thrasher are near Maricopa followed by McKittrick (Sheppard 1996). Occupied habitat is dominated by common (*Atriplex polycarpa*) or spiny (*A. spinifera*) saltbush, or a mix of the two. At the northern extreme, the Belridge oil field has several hundred acres of good habitat. Several pairs of thrashers persisted here through the drought of the late 1980's. However, throughout the larger McKittrick-Maricopa area there exists extensive areas of unsuitable nesting habitat. In early May 1997, a wildfire burned 16,000 ha in the area known as Lokern. Bird data gathered just prior to the fire, as part of a grazing effects study, documented Le Conte's thrashers adjacent to seven of eight plots while none were detected after the fire in April and May of 1998 (S. Fitton unpubl.data). Observations of Le Conte's thrasher several miles from the study plots indicate that the lack of observations in 1998 to 2000 (last available data) in the study area is likely the result of the nearly complete mortality of saltbush (charred skeletons remain) and not a decline of the species in the local area (S. Fitton pers. obs.). Large portions of the Navel Petroleum Reserve are not suitable nesting or foraging habitat due to steep slopes and sparse shrub cover. Also, several

large and barren oil fields occur in this area as well as urban areas such as Taft, Maricopa, McKittrick, and Valley Acres. The Carrizo-Elkhorn Plains area is the next closest occupied area being a mere 4.5 km to the west over the steep Temblor Mountains.

*Carrizo-Elkhorn Plains.* This area is composed of two subunits. One is the Elkhorn Plain, extending from Wallace Creek in the Panorama Hills on the north, south to Beam Flat, and from the alluvial fans on the east side of Carrizo Plain east to the beginning of the steep west slope of the Temblor Mountains. The subunit is approximately 32 km long and 2.5 km wide. The other subunit is within the southern end of the Carrizo Plain. It is a small area of gently rolling hills above the Carrizo Plain and below the steep east slopes of the Caliente Mountains, approximately 8 km long and 2.5 km wide. The birds of these two subunits probably come into contact with each other as well as with Le Conte's thrashers from the McKittrick-Maricopa area, 4.5 km to the east at the closest point. They may also come in contact with the Cuyama area birds. The Carrizo-Elkhorn birds overlap to some extent with California thrashers, this species being found on steeper slopes of both the Temblor and Caliente Mountains with a few of these larger thrashers occupying several common saltbush lined drainage bottoms. Most of the occupied habitat here is dominated by Mormon tea (*Ephedra californica*) with only occasional stringers (shrubs along washes and alluvial fans) of common saltbush.

*Cuyama Valley.* Since Sheppard (1970) first found Le Conte's thrashers in Cuyama Valley, much of the habitat has been altered by overgrazing or converted to agriculture (S. Fitton pers. obs.). The species is now only found in a small area dominated by Mormon tea, from the mouth of Ballinger Canyon north to Highway 166, approximately 8 km long and 3 km wide. There are probably fewer than 10 pairs of Le Conte's thrasher in the Cuyama Valley (S. Fitton and L. Saslaw unpubl. obs.). California thrashers occupy adjacent habitats on the steeper slopes leading toward Mt. Pinos and down slope of the agricultural land in riparian vegetation along the Cuyama river. The

McKittrick-Maricopa area is the closest area of occupied Le Conte's thrasher habitat, approximately 10 km away at the closest point. This distance is farther than this species' estimated dispersal distance capability of between 5 and 8 km (Sheppard 1996).

*Lost Hills.* This area extends north from Highway 46 for less than 10 km; the California Aqueduct is the approximate eastern boundary with Lost Hills Road on the west for a maximum width of about 3 km. Habitat patches here are small and highly fragmented with probably fewer than 20 pairs of thrashers. Some of the best nesting shrubs are in old oil settling ponds. There are very few active dry washes but patches of bare ground important for foraging are maintained by soils non-conducive to non-native annual grasses. Plowed ground and grassland separates this subpopulation from the McKittrick-Maricopa area 25 km to the south and the Kettleman Hills area 45 km to the north. It is unlikely that thrashers leave this area or that this subpopulation is augmented by birds from any other area.

*Kettleman Hills.* The most northern island of habitat. This area extends from Highway 41 north to north edge of the hills just south of Jayne Road. The east boundary is Interstate 5, and the western boundary is west edge of the hills just east of Highway 33. In the late 1960's, Sheppard (pers. comm.) estimated this subpopulation to be 200 pairs. This area is now entirely surrounded by plowed ground. In the absence of livestock grazing, much of the Kettleman Hills accumulates a thick and tall mulch that is generally avoided by Le Conte's thrasher. In 1996, 8,000 ha of saltbush habitat burned in an afternoon from an ignition point along Interstate 5. The fire destroyed most of the occupied habitat on the Middle Dome of the Kettleman Hills leaving habitat on only about half of the North Dome, from about Skyline Boulevard (Highway 269) north to the end of the hills (S. Fitton pers. obs.). Proximity to Interstate 5 and a traversing high tension power line have provided numerous fire ignitions. As a result there is little good habitat remaining in the Kettleman Hills, approximately 8 km long and 2 km wide in extent. Early in the 1900's many of the drainages were

used for transporting and separating oil. As a result of being dammed the natural hydrologic processes that benefit saltbush establishment and provide good foraging substrates have ceased. In 1998, it was optimistically estimated that there were probably fewer than 20 pairs in this area (USFWS 1998). The last known pair was observed in 1999, a single individual in 2000 and so far none in 2001 (S. Fitton unpubl. obs.). Lost Hills, 45 km to the south, is the closest occupied area. Surveys in other areas have failed to detect the species: historically documented in Poso Creek north of Bakersfield and surveyed annually from 1989 to 1995 and intermittently to 2001; and areas that appear suitable such as, Panoche Hills, Panoche/Silver Creeks, Tumey Hills, Antelope Hills, Sunflower Valley, alluvial fans on the south side of Caliente Mountain, portions of Carrizo Plain (including the margins of Soda Lake), Warthan Creek, Los Gatos Creek, Gujarral Hills, Skunk Hollow north of Coalinga, and isolated patches of saltbush along Interstate 5 from Stockdale Avenue north to Twisselman road have been surveyed intermittently from 1989 to 2001 (S. Fitton and L. Saslaw unpubl. data).

### **Ecological Requirements**

A substantial amount is known of this species' ecological requirements, summarized by Sheppard (1996). The habitat requirements are specialized beginning with topography. Gentle to rolling, well-drained slopes bisected with dry washes are sought. This condition is most often found on bajada's or alluvial fans. Except in the Kettleman and Lost Hills, steeper slopes often bring this species into contact and possible competition with California thrashers. The flat poorly drained soils of the valley floors provide suitable shrub species and structure but apparently are not suitable foraging habitat as the species avoids these habitats. Foraging areas must be well-drained, have significant percentage of bare ground, well developed litter near shrubs and have at least sparse shrub cover. Nesting areas must have at least a few larger, dense shrubs for nest placement. An

insectivore, much of the foraging is accomplished through digging into the ground or through leaf litter under and near to shrubs (Sheppard 1996).

## **Threats**

*Vulnerability Factors.* Some of the species= life history strategies and tendencies that served it well prior to European contact are now contributing to its decline. Chief among these factors are large territory size and low vagility. As one of the largest songbirds inhabiting this desert area it expectedly requires quite large territories even in its most densely populated McKittrick-Maricopa area. Territory sizes have been estimated to range from a high of 1 pair per 260 ha near McKittrick (Grinnell 1933) to 1 pair per 60 ha near Maricopa (Sheppard 1996). Territory shapes vary depending on slopes, aspects, drainage patterns and distribution of nest shrubs and foraging areas (Sheppard 1996). This thrasher=s ground foraging habits are related to its low vagility. There are very few extralimital records, even locally, for this species (Laudenslayer et al. 1992, Sheppard 1996). Changes in grass and forb species composition have occurred since European contact. While the vegetative composition prior to these changes is unknown, it is likely that the net result has been an increase in ground cover of annual plants and a related reduction in the percentage of bare ground.

*Fire.* Currently, the biggest threat to this species= occupied habitat is fire. A hot fire will kill most of the saltbush plants and stored seeds in the soil. Post-fire conditions often encourage a thick growth of non-native annuals. The effect of the non-native annuals is to reduce the disturbance caused by runoff necessary for seed germination and seedling establishment, increase the intensity and frequency of future fires, and to reduce the amount of available litter and bare ground needed for foraging. A prolonged drought with a subsequent reduction in residual dry matter could assist in delivering seeds to burned areas by removing barriers to water and wind transport of seed. Large areas of former thrasher habitat have been type-converted from saltbush

scrub to non-native annual grassland by fire. In one afternoon in 1996, 16,000 ha in two burns made such a conversion. Fires reduce the amount of habitat available for nesting and foraging, fragment habitat blocks and as a result could interfere with dispersal of young. Unlike saltbush, Mormon tea often stump sprouts in response to fire. This makes type-conversion less of a threat to the species in this community. However, in this area Mormon tea is relatively slow growing and nest shrubs can be limited following a fire. Depending on the soil type and fire history, fire may also reduce the amount of bare ground available for foraging.

*Agricultural Conversion.* Permanent type-conversion through agriculture has likely been the single biggest factor in reducing the amount of high quality habitat available to this species and in isolating currently occupied habitat islands.

*Livestock Grazing.* Grazing has historically occurred at sufficiently high levels as to convert shrubland to non-native annual grassland in several large areas. This happened as a result of summer long grazing with relatively high densities of livestock, primarily cattle. Habitat type conversion, agricultural and livestock caused, probably isolated the thrashers occupying the area north of Bakersfield during the early 1900=s. Saltbush is able to withstand moderate grazing by both sheep and cattle during the green season. The summer drought is when most of the plant=s above ground growth occurs; and late summer is its reproductive period. The benefit of grazing during a part of the year is simply to reduce the amount of fire spreading and intensifying non-native annual plant matter. Livestock stocking rates should be such that the majority of shrubs maintain a near hemispherical shape. The season of use should be restricted to when there is adequate green vegetation for livestock to select grasses, thereby minimizing utilization of the saltbush. The saltbush community should not be grazed during prolonged drought.

*Small Populations and Habitat Isolation.* Small populations are more likely to be driven to extirpation from stochastic events (Soule 1987). Isolation of habitat areas has likely contributed to

the loss of a large extent of this species= range. For example, there have been no known sightings of this species east of Interstate 5 since the mid-1970=s. The Kettleman Hills subpopulation has likely been extirpated through isolation and small population size. The Lost Hills subpopulation is very small and isolated, and consequently vulnerable to extirpation. The Cuyama Valley, and Elkhorn and Carrizo Plains probably maintain sufficient connection to the McKittrick-Maricopa subpopulation area and to each other to avoid extirpation. However, these relatively small populations may function as population sinks. Within the McKittrick-Maricopa subpopulation area there probably has and no doubt will in the future have sufficiently isolated and small habitat patches that experience local extirpation. There is also likely to be relative population sinks and source areas within this patchy and fragmented subpopulation

### **Management and Research Recommendations**

- Protect, maintain and restore suitable qualities and quantities of habitat, including linkages between habitat areas within subpopulation areas and between the three southern subpopulations. An important component of this is to maintain natural processes of wind and water erosion, and transport of sediments and runoff both in uplands and drainages.
- Study the genetic distances between and within the five known subpopulations.
- Quantitatively assess the influence of non-native annual plants on fire frequency and intensity, reduction of the percent of bare ground, saltbush recruitment and thrasher reproductive success.
- Study competitive interactions with the apparently dominant California thrasher and assess the effect this species may have on persistence probabilities, especially in the Cuyama and Carrizo-Elkhorn Plains areas.
- Determine options for land management and ownership once oil fields are no longer productive in the McKittrick-Maricopa, Lost Hills and Kettleman Hills Areas.

- Determine thresholds for triggering the submission of a listing proposal to the U.S. Fish and Wildlife Service and/or California Department of Fish and Game.

#### *McKittrick-Maricopa*

- Review habitat distribution for potential subpopulation bottlenecks or areas vulnerable to being disconnected from the remainder of the habitat.
- Attempt to restore large areas of saltbush community type-converted by fire, primarily in the Lokern Natural Area.
- Maintain, at a minimum, corridors of intact habitat through oil field development along properly functioning drainages.

#### *Carrizo-Elkhorn Plains*

- Study the conditions necessary for perpetuating the Mormon tea dominated plant community.

#### *Cuyama Valley*

- Restore Mormon tea habitat east of Highway 33 and west of the hills.

#### *Lost Hills*

- Maintain, at a minimum, corridors of intact habitat through oil field development along properly functioning drainages.
- Determine suitability of reclaimed and revegetated gypsum strip mines for thrashers.

#### *Kettleman Hills*

- Determine if the species is extant.
- Evaluate the practicality of restoring the hydrological processes of several of the largest drainages on the North Dome in order to assist perpetuating saltbush along active drainages.
- Assuming the species is extant, evaluate restoring saltbush habitat in alluvial fans currently under active agricultural use.

## Monitoring Needs

- The San Joaquin Valley Le Conte's thrasher should be monitored every 5 years.
- The extent of available habitat should be monitored, preferably on an annual basis.

## Acknowledgments

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